



NRDC Comments on CEC's October 7, 2011 Notice of Proposed Action on Battery Chargers

2011 Rulemaking Proceeding Phase II on Appliance Efficiency Regulations: Docket Number 11-AAER-2

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On behalf of the Natural Resources Defense Council and our more than 250,000 members and online activists in California, we respectfully submit these comments on the Energy Commission's proposed regulation on battery chargers posted on October 7, 2011.

NRDC strongly supports California Energy Commission's (CEC) Battery Charger Systems (BCS) proposed mandatory standard and encourages CEC to proceed without delay to lock in strong savings for Californians as well as to positively influence the US Department of Energy (DOE) federal rulemaking.

CEC's proposed standard will save California the equivalent of the output of a 350 MW power plant, enough electricity to power all the households in a city the size of San Francisco. Each year of sales of products meeting the standard will save Californians \$300 million in reduced electricity costs over the lifetime of the products. The reinvestment of these savings will stimulate the California economy, creating jobs. Finally, the standard is very cost effective: for every dollar of incremental retail cost for the efficiency improvements, Californians will save 7 dollars in reduced electricity costs, an excellent return on investment by any standard.

For this to happen, California needs to enact the standard before DOE, in order to lock in savings until preemption by a federal standard, as well as to influence DOE to set a standard at the same level of stringency, so that Californians keep the same level of savings after pre-emption.

In support of CEC moving forward with a strong standard, NRDC offers comments on the following topics:

1. California needs to set a strong standard before DOE
2. Small mobile IT devices can meet the proposed standard
3. Efficiency marking is key to facilitate global adoption of BCS efficiency standards and make the California standard even more cost-effective for Californians

Discussion

1. California needs to set a strong standard before DOE

The federal BCS energy efficiency standard under development by DOE will preempt state standards when it is enacted. However the statute (42 USC 6295 Paragraph u) allows state standards enacted before DOE's final rule is issued to keep their standard in place until the federal standard takes effect. DOE's schedule is uncertain, as they have not yet published a Notice of Proposed Rulemaking (NOPR) at this date, and will need several months from that date until they can issue a final rule due to legal requirements. Even after adoption, it will take 2 years for the federal standard to become effective. This gives California an opportunity to capture savings ahead of DOE for at least 12 months and likely 18 months or longer depending on when DOE's federal standard takes effect. For every month that California's standard is in place before pre-emption, Californians will save an incremental \$25 million in avoided electricity costs. NRDC therefore strongly encourages CEC to proceed with this rulemaking without delay.

To ensure that Californians maintain the same level of savings as with the pre-empted state standard after pre-emption, the federal standard needs to be of equivalent stringency. DOE's preliminary analysis identified 4 candidate standard levels (CSL), with CSL1 and CSL2 being the most likely levels for the future federal standard. CEC's proposed standard is very close to CSL2. DOE's analysis shows that CSL2 would yield 60% greater savings than CSL1.

The best way to ensure that Californians keep the 60% additional savings above CSL1 is for CEC to pave the way for DOE to set the federal standard at CSL2. If California leads by setting its own standard at CSL2, it is unlikely that DOE would set a weaker federal standard, given that cost-effectiveness and savings are comparable between California and federal level.

2. Small Mobile IT Devices

Comments by the Information Technology Industry Council (ITI) express concerns about the ability for small IT devices, particularly small notebooks with battery capacities of less than 50Wh, to meet the Maintenance and No Battery limit as well as the 24-hr Charge and Maintenance requirement. They also point to challenges meeting the upcoming European Union (EU) 1275/2008 Tier 2 Standby limit of 0.5W.

NRDC investigated these concerns and concluded that typical products currently on the market already meet the Commission's proposed standard. In addition California's proposed standard is less stringent than the EU's Tier 2 "Standby" standard due to become effective in January 2013 at the same time as the California standard. We encourage the Commission to implement the standard as proposed in order to ensure all notebook computers sold in California implement energy efficiency best practices already available in the market.

Maintenance Mode Functions

ITI's comments mention "functional capabilities (e.g. system interrupts, phone calls, notices, etc.), battery management (e.g. charge protection, monitoring, etc.) and battery charging when necessary while under AC load", as well as USB power availability, as causing power losses that would exceed the proposed limits. We believe this is a misunderstanding because Maintenance mode as defined by the test procedure does not intend the above functions to be active. The test procedure requires "user-controllable device functionality not associated with battery charging and any battery conditioning cycle or setting to be turned off". In the context of mobile IT devices, this is readily achieved by placing the device in Off mode (ACPI S5 or equivalent). Typical notebooks, tablets and smart phones in Off mode do not provide the aforementioned functions. Instead these functions are characteristic of Sleep mode (ACPI S3 or equivalent). The evidence presented in the Methodology and Data section below shows that typical mobile IT devices in true Off mode easily meet the proposed maintenance and no-battery limits.

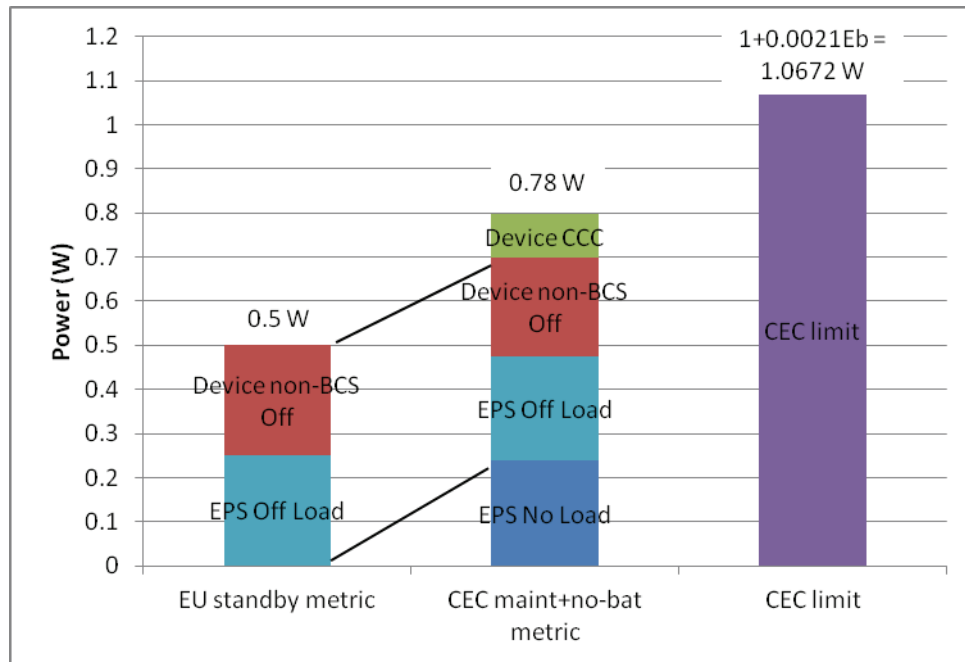
The low maintenance power in true Off mode also enables small mobile IT devices to meet the 12 N+1.6 Eb limit of the 24-hr charge and maintenance requirement.

Comparison with EU Standby Limit

Our analysis below indicates that the EU 0.5W standby/Off limit is significantly more stringent than the proposed CA Maintenance and No Battery limit. Even models that would exceed the EU limit by up to 0.3-0.4W would still be able to satisfy the California limit.

The chart below shows that a small notebook with a standby power of 0.5 W per the EU metric, would meet the CEC combined maintenance and no-battery limit with over 0.25W margin.

Figure 1: Correspondence between EU and CEC Standby metrics



This example is based on a typical small notebook with a 4-cell battery of 32Wh capacity. The calculations for the EU and CEC metrics are explained in the Methodology and Data section of this document.

Figure 1 in ITI comments shows Standby/S5 power of the Energy Star 5 data set relative to the EU Standby limit of 0.5W. It is important to remember that Energy Star 5 data dates back to 2008. Notebooks energy efficiency in standby mode has improved significantly since then and there is still over 12 months before the California battery charger and EU Tier 2 standards become effective, which gives manufacturers significant time to incorporate more efficient designs. The most efficient products on the market already meet the 0.5 W EU limit today.

In addition, the California standard apply to the manufacturing date, not the purchase date, which give industry additional time to comply. Manufacturers will still be able to sell in 2013 products manufactured before January 2013.

Methodology and Data

Power data was collected for recent HP and Dell netbooks from their web sites:¹

OEM	Model	Document date	S5 w/ WOL (115V)	S5 w/o WOL (115V)	S5 w/ WOL (230V)	S5 w/o WOL (230V)	EPS No Load (115V)	EPS No Load (230V)
HP	HP Mini 210	May-11	0.59	0.59	0.65	0.65	0.156	0.171
HP	HP Mini 3105m	May-11	0.47	0.74	0.58	0.87	0.250	0.230
HP	Compaq Mini CQ10	Apr-11	0.59	0.59	0.65	0.65	0.156	0.171
Dell	Inspiron Mini 1018 - PP09T001	Sep-10	0.82				0.330	
Dell	Inspiron™ Mini 10v, Inspiron™ 1011, Inspiron™ 1011n	Feb-11	0.87				0.258	
Dell	Inspiron™ Mini 10, Inspiron™ 1010, Inspiron™ 1010n	Feb-11	0.87				0.277	
Average			0.702	0.640			0.238	

This data was used to estimate power use by this type of small notebook computer for both the EU Standby and the California combined maintenance and no-battery metrics.

These metrics were calculated using the following quantities:

EU metric for Off/Standby:

1. **EPS Off Load:** EPS losses at load corresponding to device power use by non-battery charging functions in Off mode
2. **Device non-BCS Off:** device power consumption in Off mode (S5) with battery removed

CEC metric for combined Maintenance and No Battery modes:

1. **EPS No Load:** per the test procedure, this corresponds to No Battery power for notebooks
2. **EPS Off Load:** EPS losses at load corresponding to device Off (including charge control circuitry power, but approximated to EPS Off Load for simplicity as incremental EPS losses for charge control circuitry power are negligible)
3. **Device non-BCS Off:** device power consumption in Off mode (S5) with battery removed
4. **Device CCC:** charge control circuitry (CCC) and battery power of device in S5/Off mode

¹ <http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/iteconotebook-o.html>
http://www.dell.com/content/topics/global.aspx/about_dell/values/regulatory_compliance/dec_co_nform?c=us&l=en

The manufacturer data shows EPS No Load amounts to an average of 0.238W, and a minimum of 0.156 W. We have used the average of all 6 data points, which is conservative because the most recent data points are significantly lower (average of 0.187W).

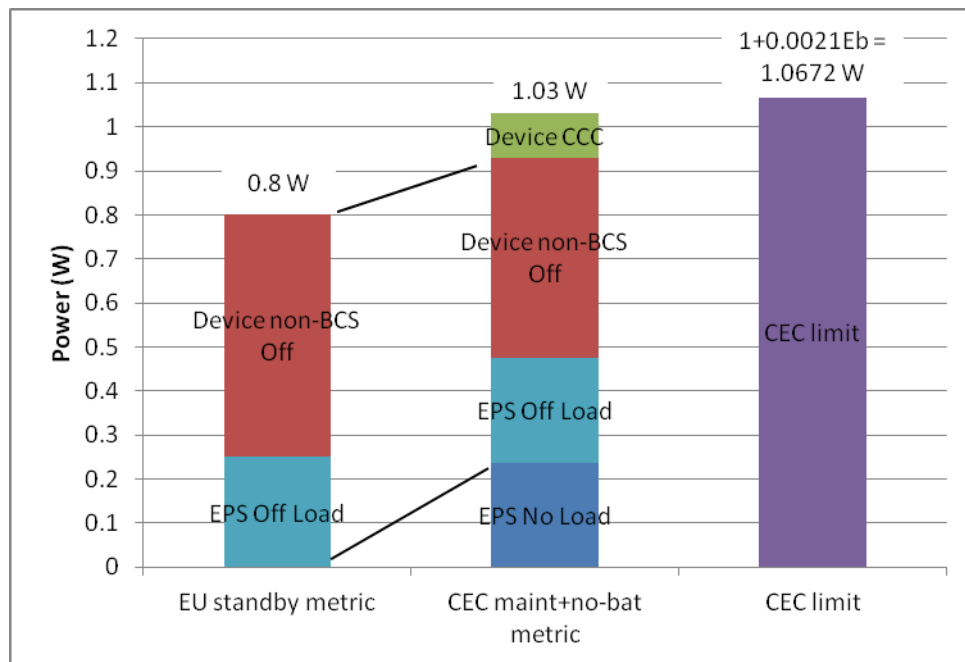
Charge control functions were estimated to be significantly less than 0.1W (less than 0.005W per Ecova²). We used 0.1W here as a conservative estimate.

A reduction factor of 10-15% (depending on the standby power level) was applied to account for the difference of power use by a same product on 230V and 115V voltage. This reduction factor was estimated using manufacturer data available in environmental datasheets.

This approach enables us to determine that the power equivalent to a 0.5W EU Standby limit is less than 0.78W for the CEC metric, significantly less than the $1 + 0.0021E_b$ CEC limit.

Using the same approach, we determined that the EU Standby power level corresponding to the CEC proposed limit is approximately 0.8 to 0.9 W, significantly higher than the EU limit of 0.5W. This means that even notebooks exceeding the EU limit and using up to 0.8 to 0.9W per the EU metric, will still be able to comply with the proposed CEC Maintenance and No Battery limit.

Figure 2: EU Standby power corresponding to CEC Maintenance and No Battery limit



² 12 uW/cell for protection plus 4 mW for charge control for the whole battery, so less than 4.1 mW total for a 4-cell battery

In conclusion, the California proposed maintenance and no battery limit is readily achievable by small mobile IT devices and most of them already meet the standard today, over 1 year ahead of the standard's effective date. NRDC encourages the Commission to implement the standard as proposed in order to ensure all notebook computers sold in California implement energy efficiency best practices already available in the market.

3. Efficiency Marking is Key to Facilitate Global Adoption of BCS Efficiency Standards and Make the California Standard even more Cost-Effective for Californians

Stakeholder concerns about the proposed “labeling” requirement are unfounded and may be the result of confusion on the actual requirement and its purpose.

The requirement is not a labeling, but a marking requirement. It does not require a physical label made of paper or other material to be placed on the product, but just a mark to be printed or molded on the product casing, along with other regulatory conformity marks. This adds no cost or environmental impact to the manufacturing of the product. This is exactly the same as the External Power Supply (EPS) marking requirement pictured below:



The purpose of the marking requirement is to facilitate enforcement and harmonization of multiple efficiency levels internationally. Marking was instrumental in driving international adoption of the EPS efficiency standards, and it will have the same effect on battery charger efficiency. Rapid global adoption of BCS efficiency standards will lower the cost of high efficiency BCS, making the standard even more cost-effective for Californians.

The efficiency mark provides regulators with a framework for consistent regulations globally. Industry will benefit from having a consistent set of regulations to design to and comply with. The mark is not intended to be a consumer facing label like Energy Star, it is targeted at regulatory agencies and the industry supply-chain.

While the mark will be pre-empted by the upcoming federal regulation, it is important for California to create a precedent and encourage the US Department of Energy to adopt it. In the likely scenario where DOE and other agencies internationally adopt the marking requirement, there will be a continuity of marking requirements for industry, with California preceding other requirements.

Conclusion

NRDC thanks the Energy Commission for its leadership in establishing an effective standard to capture cost effective energy efficiency opportunities in battery chargers in California.

Thank you for your consideration of NRDC's comments.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Delforge', with a stylized flourish at the end.

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